

Exergy an Indicator for Coastal Environmental Management The Case of Dar es Salaam, Tanzania (East Africa)

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Tanzania has five major urban settlements along the coastal area of the Indian Ocean. These are Dar es Salaam, Tanga, Zanzibar, Mtwara and Bagamoyo arranged in order of their size. Dar es Salaam City has a population of about three million people (3 million); it is a centre for business and a harbour that serves five countries of east and central Africa. The shift to market economies of the country has attracted investors and visitors to Dar es Salaam. The city now is a transit route for central and east African tourism and business. There are 575 industries and 1,3471 small industries. The city expansion cannot keep pace with planning as such 70% of the residents live in unplanned areas.

The coastal stretch that borders the city on the east is much influenced by the city activities. Municipal and industrial wastewater and solid waste are important point source pollutants of the coastal environments. Msimbazi River carries much of the pollutants into the sea. A sewer outfall discharges municipal wastewater into the sea. The rapidly growing industrialisation and population call for alarm as far as coastal environmental management is concerned.

As the pollution on the coastal area goes on unabated. Mangrove plants and aquatic life along the beach are changing, bad smell of decomposing marine organisms are not uncommon on the beach (Dar es Salaam beach).

With the wastes varied in complexity and the degree of their pollution effect upon the environment the waste characteristics tolerance limits (standards) are set on the rationale based upon their detrimental effect upon human health, the aquatic environment and treatment systems. Hence, several parameters are used for assessment and management of waste substances in the environment. How do different waste parameters compare on the scale of environmental effect? What then is the overall effect of pollutants on the environment? Can environmental standards be set basing on their real effect? Answering these questions will bring us closer to real environmental rating and subsequent proper Coastal management. This paper looks at exergy and how it can be used as a criterion to manage the coastal environment with examples from Dar es Salaam Tanzania, East Africa.